Miniature Release Mechanism

Completed Technology Project (2012 - 2014)

Project Introduction

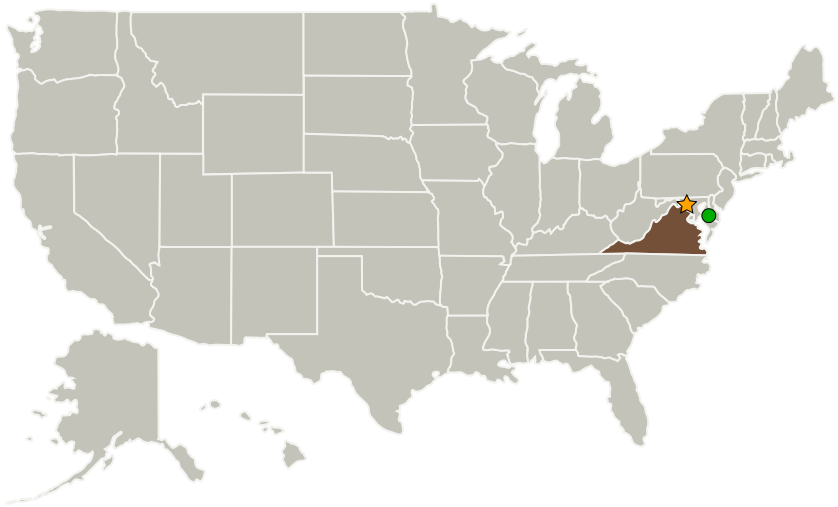
The internal volume within a small satellite, such as a CubeSat, is very limited and all reasonable efforts should be made to minimize component sizes and maximize volume for the science instrument and/or extra capability. When considering deployables for these satellites, one challenge has been finding a reliable COTS release mechanism that will have minimal impact on the internal volume. This proposal looks to address this need by investigating the feasibility of a miniature release mechanism by designing, building, and testing a prototype.

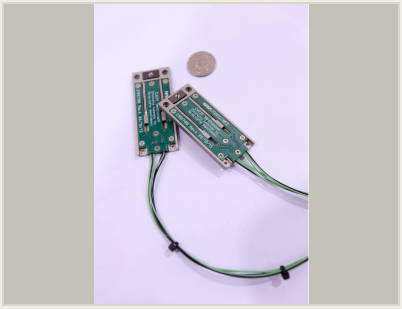
The objective is to design, build and functionally test a miniature release mechanism for CubeSats and other small satellites. The WFF 6U satellite structure will be used as the baseline design reference. Design goals for the unit include: Low cost Non-explosive, low release energy Packaging height target of 0.25 inches or less Two fault tolerance initiation Resettable and usable for at least 10 cycles Low power

Anticipated Benefits

Design would be available for use by funded NASA missions willing to qualify the design for their purposes.

Primary U.S. Work Locations and Key Partners





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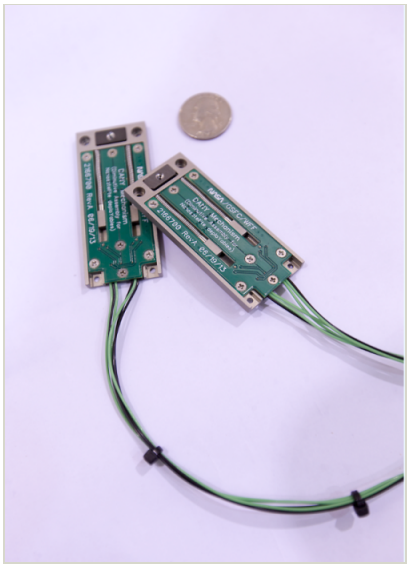
Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
●Wallops Flight Facility(WFF)	Supporting Organization	NASA Facility	Wallops Island, Virginia

Primary U.S. Work Locations
Virginia

Images



Miniature Release Mechanism Project
Miniature Release Mechanism Project
(https://techport.nasa.gov/image/4102)

Project Website:

http://aetd.gsfc.nasa.gov/

Organizational Responsibility

Responsible Mission Directorate:
Mission Support Directorate (MSD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Independent Research & Development: GSFC IRAD

Project Management

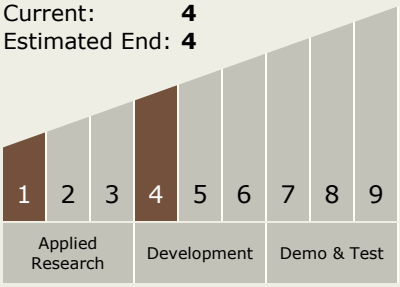
Program Manager:
Peter M Hughes

Project Manager:
Wayne R Powell

Principal Investigator:
Luis H Santos Soto

Technology Maturity (TRL)

Start: **1**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.8 Docking and Berthing Mechanisms and Fixtures